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Appln. No. 09/893,202

PATENT  
Attorney Docket No.: 74577-031Amendments To The Specification:

Please replace the paragraph beginning at page 2, line 4 with the following rewritten paragraph:

Remote Procedure Calls allow a client computer to call a function which is executed on a server. A Remote Procedure Call (RPC) abstracts the communication interface to the level of a procedure call and gives a programmer of the client software to treat the function as a local procedure when in fact the arguments of the call are transmitted to the remote target of the call and the results are returned. RPC systems encode arguments and return values using an external data representation, such as XDR. ~~Another~~ Other common distributed object systems include CORBA (the Common Object Request Broker Architecture) and Microsoft's DCOM (Distributed Component Object Model). The conceptual underpinning of both of these systems is the notion of "distributed objects" which are viewed as an extension of the object-oriented paradigm across networks.

Please replace the paragraph beginning at page 5, line 15 with the following rewritten paragraph:

Provider servers can be implemented to provide functions and groups related to specific types of data. For example, a server according to the present invention that can provide real-time market data for stock symbols on demand can provide a getTypes service which returns the text string "StockSymbols", a getAtoms service which returns

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the stock symbol universe tagged as atoms of type StockSymbols" and a getGroups service which can return groupings of the stocks into indexes, sectors. Alternatively, indexes and sectors can be provided by a separate server. The market data server getFunctions service returns functions such as "bid", "ask", and "last", each of which takes an atom of type "StockSymbol" as a parameter and returns a floating-point number. The evaluate service of the provider receives a function object (such as "bid", "ask", or "last") with specified parameters (e.g., "IBM") and returns the current price for the specified stock symbol(s).

Please replace the paragraph beginning at page 7, line 19 with the following rewritten paragraph:

In the context of the present invention, a function is a procedure or data request which operates on one or more specified parameters and returns result data based upon the parameters. The parameters for a given function are preferably selected from a predefined set of parameter types. The software can be developed with the awareness of this set of parameters so that the client software can correctly provide parameters specified by a given function object. Although not required, in the preferred implementation, at least one of the parameters for each function object is a group identifier. Groups are sets of one or more "atoms" which specify specific items, such as ticker symbols, names of companies, or names of people. In a specific implementation of the present invention, the groups comprise sets of one or more ticker symbols.

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identifiers, such as index or risk class, and the function will return financial information or analysis about the securities in a specified group, such as the last closing price for each security.

Please replace the paragraph beginning at page 11, line 3 with the following rewritten paragraph:

The updated function object is sent to the connected provider 12 or manager 16. If the receiving server is not the provider of the received function object, that server issues an eval() request to the appropriate downstream provider 12 and passes the received function object as an argument. The process continues as the function object is received by the provider that will evaluate it. After the function object is received by the provider of that function and evaluated, the results of the evaluation are then returned to the client. Preferable, the results are returned by storing the results in the received function object and then returning the function object to the client. This process is summarized in the diagram of Fig. 2.

Please replace the paragraph beginning at page 18, line 19 with the following rewritten paragraph:

Once the function manager delegates an eval() to the appropriate provider, the function provider can evaluate the function in a number of different ways, such as retrieving data from a local cache, or evaluating the function with reference to external data. The manner in which a function should be evaluated can be specified in the

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function meta data maintained at the respective provider 12. In a preferred embodiment, when a function provider receives an eval() the function provider accesses the function meta-data to determine the type eval() to perform. The eval() flow is summarized in Fig. 7.

Please replace the paragraph beginning at page 19, line 3 with the following rewritten paragraph:

For example, if the eval type is of "function data cache", then the return value for that function can be stored in the function data cache maintained by the provider. The cache can be accessed to retrieve the result data when a subsequent eval of the same function is received. In the event of a cache miss, the function can be evaluated using a separate mechanism and the results stored in the cache. For an "SQL" eval type, the function provider can retrieve an SQL query string from the function meta-data and execute the query against an appropriate database. For a "return" type function specification, such as "JAVA", the function provider can load a corresponding JAVA class and execute a method to get the return value or execute a specified custom function in an other appropriate manner. Different function evaluation techniques can also be specified at various levels of complexity. For example, a function which returns a current price of a security can be configured to be executed one way during trading hours, e.g., to retrieve the price from a real-time price feed, while at other times the function is executed

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against a data cache or historical price repository. Other variations will also be appreciated by those of skill in the art.